

In the Claims:

Please amend the claims as follows.

1. (Currently Amended) A process, comprising: removing water from ~~for the removal of sulfur compounds from~~ a hydrocarbon stream, comprising water and sulfur compounds selected from the group consisting of hydrogen sulfide, carbonyl sulfides, mercaptans, especially C₁-C₆ mercaptans, organic sulfides, especially di-C₁-C₄-alkyl sulphides, organic sulfides, especially di-C₁-C₄-alkyl disulfides, thiophene compounds, aromatic mercaptans, especially phenyl mercaptan, and mixtures thereof, wherein the total amount of said sulfur compounds contained in the hydrocarbon stream is up to 3 vol%, based on total hydrocarbon stream, especially a gaseous hydrocarbon gas stream, comprising said sulfur compounds, which process comprises by adsorbing water therefrom onto a first zeolite having a pore diameter of less than 5 Å; and thereafter, contacting said hydrocarbon gas stream with an adsorbent comprising a second zeolite having a pore diameter of at least 5 Å to adsorb the sulfur compounds thereon to thereby provide a loaded adsorbent, the adsorption process followed by a regeneration of said loaded adsorbent process in the presence of water of used, loaded adsorbent, by contacting the said loaded adsorbent with a regeneration gas stream having a relative humidity of at most 30%, wherein the regeneration gas is and comprising an inert gas or an inert gas mixture.

Claims 2-4 (Canceled).

5. (Currently Amended) A process according to claim [[4]]1, in which the gas hydrocarbon stream also comprises hydrogen sulfide and optionally carbon dioxide and up to 2 vol% hydrogen sulfide, with the hydrogen sulfide and part of the carbon dioxide being removed by means of washing the gas hydrocarbon stream with a chemical solvent.

6. (Currently Amended) A process according to claim 5, in which the temperature of the zeolite adsorption process is between 10 and 60 °C, the pressure is between 10 and 150 bara, and the superficial gas velocity is between 0.03 and 0.6 m/s.

7. (Currently Amended) A process for the regeneration of an adsorbent, wherein said process comprises:

providing one or more vessels having a first adsorbent bed comprising a first zeolite having a pore diameter of 5 Å or less and a second adsorbent bed comprising a second zeolite having a pore diameter of more than 5 Å;

using said one or more vessels in the removal of sulfur from a hydrocarbon stream to provide said second zeolite that is loaded with sulfur; and

regenerating said second zeolite that is loaded with sulfur a zeolite having a pore diameter of at least 5 Å and loaded with sulfur compounds by contacting the adsorbent with a regeneration gas stream having a relative water humidity less than 100%.

8. (Previously Presented) A process according to claim 7, in which the adsorbent comprises zeolite dispersed in a binder.

Claim 9 (Canceled).

10. (Currently Amended) A process according to claim 9₇, in which the regeneration is carried out at a pressure between 1 and 150 bara, a temperature between 200 and 400 °eC, and a superficial gas velocity of less than 0.20 m/s.

11. (Previously Presented) A process according to claim 10, in which the regeneration gas stream is a gas stream obtained by saturating the stream at a temperature below the regeneration temperature.

12. (Previously Presented) A process according to claim 11, in which the regeneration gas stream has a relative humidity between 0.1 and 30%.

Claim 13 (Canceled).

14. (Currently Amended) A process for the removal of sulfur compounds from a hydrocarbon stream, wherein said hydrocarbon stream contains a sulfur compound selected from the group consisting of hydrogen sulfide, carbonyl sulfide, mercaptans, organic sulfides, organic disulfides, thiophene compounds, aromatic mercaptans and mixtures thereof, said process comprises:

treating said hydrocarbon stream to remove water therefrom followed by contacting
said hydrocarbon stream with an adsorbent comprising a zeolite having a pore diameter of at least
5 Å to absorb said sulfur compound thereon to thereby provide a sulfur loaded adsorbent; and
contacting said sulfur loaded adsorbent with a regeneration gas stream having a relative humidity
of at most 30%, wherein the regeneration gas comprises an inert gas.

Claim 15 (Canceled).

16. (Previously Presented) A process according to claim 15, wherein said mercaptans include C₁-C₆ mercaptans, said organic sulfides include di-C₁-C₄-alkyl sulfides, organic disulfides include di-C₁-C₄-alkyl disulfides, said aromatic mercaptans include phenyl mercaptan, and the total amount of said sulfur compounds contained in said hydrocarbon stream is up to 3 vol% based on total gas stream.

Claim 17 (Canceled).

18. (Currently Amended) A process according to claim 1716, in which said hydrocarbon stream prior to contacting with said adsorbent, comprises hydrogen sulfide in the range up to 2 vol% hydrogen sulfide, and a part thereof is removed by means of washing with a chemical solvent.

19. (Previously Presented) A process according to claim 18, in which the temperature of the step of contacting said hydrocarbon stream with said adsorbent is between 10 and 60 °c, the pressure is between 10 and 150 bara, and the superficial gas velocity is between 0.03 and 0.6 m/s.

20. (Currently Amended) A process for the regeneration of an adsorbent, comprising a zeolite having a pore diameter of at least 5 Å and which is loaded with a sulfur compound, by contacting the adsorbent with a regeneration gas stream having a relative water humidity of at least 0.1% and less than 100%, wherein said adsorbent is contained in at least two beds, with

one bed comprising a first zeolite having a pore diameter of up to 5 Å, and with a second bed comprising a second zeolite having a pore diameter of more than 5 Å.

21. (Previously Presented) A process according to claim 20, in which wherein said adsorbent of said second bed further comprises said second zeolite dispersed in a binder.

Claim 22 (Canceled).

23. (Currently Amended) A process according to claim 2221, in which the contacting step is carried out at a pressure between 1 and 150 bara, a temperature between 200 and 400 °eC and a superficial gas velocity of less than 0.20 m/s.

24. (Previously Presented) A process according to claim 23, in which said regeneration gas stream is a gas stream obtained by saturating the stream at a temperature below the regeneration temperature.

25. (Previously Presented) A process according to claim 24, in which said regeneration gas stream has a relative humidity between 0.1 and 30%.